CLAIMS

1. A contact sensitive device comprising:

a member capable of supporting bending waves;

a sensor mounted on the member for measuring bending wave vibration in the member to determine a first measured bending wave signal;

at least a second sensor to determine a second measured bending wave signal; and

a processor configured to optimise a product of a set of corrected impulse response measurements from each sensor to determine information related to a contact.

2. A contact sensitive device according to claim 1 wherein the second measured bending wave signal is measured simultaneously with the first measured bending wave signal.

3. A contact sensitive device according to claim 1, wherein a corrected impulse response measurement is calculated by calculating a Fourier transform of the measured bending wave signal, calculating an equivalent response from a notional sensor positioned at a contact site and calculating an inverse Fourier transform of an equivalent response to provide a function to be optimised.

4. A contact sensitive device according to claim 3, wherein the optimisation includes iterative refinement of estimates of

a location of the contact and a time for which the maximum value of the product is obtained.

5. A contact sensitive device according to claim 4, wherein an initial estimate of the location and the time is derived from impulse response functions whose high frequency components have been suppressed.

6. A contact sensitive device according to claim 1, wherein the processor is configured to determine the contact position by using knowledge of the periodicity of a pattern on the surface of the member.

7. A contact sensitive device according to claim 6 wherein an interval between impulses represents the time in which a contact has travelled to an adjacent feature of the pattern.

8. A contact sensitive device according to claim 1, wherein the device includes a purely passive sensor responsive to measure bending wave signals generated by an initial impact or by frictional movement of the contact.

9. A contact sensitive device according to claim 1, wherein the device includes an active sensor comprising an emitting transducer.

10. A contact sensitive device according to claim 1 wherein the device inclues a dual active and passive sensor and is configured to switch between active and passive sensing modes depending on whether contact is applied to the device.

11. A contact sensitive device according to claim 10, wherein the device cycles between resting in passive sensing mode when no contact is detected, switching to active mode sensing when a contact is applied and returning to passive sensing mode once the contact is removed to wait for further contacts.

12. A method of determining information related to a contact on a touch sensitive device having a member capable of supporting bending waves, the method comprising:

measuring bending wave vibration in the member to determine a first measured bending wave signal using a sensor mounted on the member;

calculating information relating to the contact from the measured bending wave signal from the sensor;

determining a second measured bending wave signal which is measured using a second sensor; and

optimising a product of a set of corrected impulse response measurements from each sensor to determine information related to the contact.

13. The method as recited in claim 12 wherein the second

measured bending wave signal is measured simultaneously with the first measured bending wave signal.

14. A method according to claim 12, wherein the corrected impulse response measurement is calculated by calculating the Fourier transform of the measured bending wave signal, calculating an equivalent response from a notional sensor positioned at the contact site and calculating the inverse Fourier transform of the equivalent response to provide a function to be optimised.

15. A method according to claim 14, wherein the optimisation includes iterative refinement of estimates of the location of the contact and the time for which the maximum value of the product is obtained.

16. A contact sensitive device according to claim 15, wherein an initial estimate is derived from impulse response functions whose high frequency components have been suppressed.

17. A method according to claim 12, further comprising determining the contact position by using knowledge of periodicity of a pattern on a surface of the member and wherein an interval between impulses represents a time in which the contact has travelled to an adjacent feature of the pattern.

18. A method according to claim 12, further comprising passively sensing the bending wave vibration and hence the measured bending wave signals are generated by an initial impact or by frictional movement of the contact.

19. A method according to claim 12, further comprising actively sensing the bending wave vibration using an emitting transducer.

20. A method according to claim 12 wherein the device includes a dual active and passive sensor and the method further comprises switching between active and passive sensing modes according to whether contact is applied to the device.

21. A method according to claim 20, further comprising resting in passive sensing mode when no contact is detected, switching to active mode sensing when a contact is applied and returning to passive sensing mode once the contact is removed to wait for further contacts.

22. A contact sensitive device comprising:

first means for measuring bending wave vibration in the member to determine a first measured bending wave signal;

second means for determining a second measured bending wave signal; and

means for optimising a product of a set of corrected impulse response measurements from each sensor to determine information related to a contact on the contact sensitive device.

23. A contact sensitive device comprising a member capable of supporting bending waves, a sensor mounted on the member for measuring bending wave vibration in the member to determine a first measured bending wave signal and a processor which calculates information relating to the contact from the measured bending wave signal from the sensor, wherein a surface of the member comprises a raised pattern whereby a contact drawn across the surface provides a variable force to the member to generate bending waves in the member.

24. A contact sensitive device according to claim 23, wherein the pattern is periodic.

25. A contact sensitive device according to claim 23, wherein the pattern is quasi-periodic with a statistically well-defined spatial distribution of undulations.